Appendix E

WINTER STORM MANAGEMENT OF ARIZONA STATE HIGHWAYS (Chapter 6: Recommended Mitigation Measures)

ADOT is responsible for keeping transportation corridors safe and operational during winter months, despite costs associated with winter storm management techniques. However, potential short and long-term impacts must be considered. The following list of mitigation measures is recommended for implementation by ADOT to reduce potential impacts without compromising public safety. These measures are not site-specific.

Chemical Additives

- Minimize sodium ion use in fine-textured soils.
- Minimize chloride ion use in highly permeable (high percolation rate) soils.
- Minimize use of chemicals near surface waters.
- Minimize splash of pavement slush on trees within the transportation corridor by reducing plow speeds.
- Keep chemical additions to a minimum (BMP's).
- Require vendors to provide an independent third-party test of chemical additives content prior to purchase.

Abrasives

- Maximize efforts to recover abrasives in urban areas and near rivers or streams.
- Handle recovered abrasives so as to minimize absorption of other contaminants during recovery.
- Maximize use of abrasives in highly permeable (high percolation rate) soils.

Non-Additive Management Techniques

- Use corrosive-resistant infrastructure materials.
- Closely monitor signs to match transportation corridor conditions (RWIS).
- Incorporate mitigation into decision-making process during annual District "snow meeting".
- Require traction devices on tires such as chains, studs, or cables where conditions warrant.
- Install snow fences in high drift areas where feasible.
- Expand shade reduction activities and coordinate these activities with adjacent land-managing agencies. Vegetation modification should conform to visual management plans or objectives and follow recommendations to conserve scenic values along Arizona's Parkways, Historic, and Scenic Roads.
- Provide the Forest Service with each District's annual Snow Plan.
- Improve training for all ADOT Maintenance District staff at the statewide level.

- Invest in additional road weather information system stations to enable ADOT Maintenance District staff to forecast, monitor, and utilize real-time weather data to assist in winter storm management.
- Provide ADOT Maintenance District staff with adequate equipment such as computer-controlled spray trucks to accommodate chemical additive and abrasive applications to reach annual Snow Plan objectives.

Environmentally Sensitive Areas

In addition to implementing the mitigation measures described-above, the following mitigation measures should also be followed in environmentally sensitive areas.

- Maximize plowing in environmentally sensitive areas.
- Minimize use of chemical additives near unique or impaired waters
- Districts with transportation corridors in close proximity to critical habitat should contact the appropriate agency before vegetation removal.

Monitoring and Study Needs

In addition to the mitigation measures described above, the following is a list of recommended monitoring and study needs.

- Sodium ion use in fine-textured soils.
- Chloride ion use in highly permeable (high percolation rate) soils.
- Use of chemicals near surface waters.
- Establish a water quality monitoring program in Oak Creek to monitor potential impacts resulting from winter storm management.
- Improve winter storm management record-keeping. Records should identify areas that receive chemical additives, abrasives, and /or non-additive management techniques; method and frequency of abrasive clean-up; and type and effectiveness of employed methods.
- Compare annual results from BMS samples and modify winter storm management techniques as indicted by BMS results.